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Vol. 3, No. 3 MARCH, 1921 Old Series Vol. xix, No. 3

The Journal of Orthopædic Surgery

# HALLUX VALGUS, RIGIDUS AND MALLEUS*

BY PROFESSOR MARK JANSEN, LEYDEN

Hallux valgus, rigidus and malleus may occur separately, but very often they are associated. And in the combined conditions each may occur in the most varied degree.

Two principles make themselves felt in these deformities: 1° disturbance of muscle balance, which is most prominent in hallux valgus; and 2° joint wear, the arthritis deformans of text books. It is most prominent in hallux rigidus.

Hallus rigidus is due to extra strain upon the first metatarsophalangeal joint. It is apt to develop in people with slightly everted foot, in which the line of gravity in walking passes nearer the first metatarsal than normally. Hence in people with muscle weakness, especially those who have outgrown their strength, i. e. the type of slight feebleness of growth. Their feet and hands are as a rule moist, blue and cold. The characteristic flattening of the metatarsal head with gradual shortening of this bone, the lipping, the thinness of the joint cartilage, the vascular tissue below the cartilage and in the synovial membrane are well known. The lipping causes pain from pressure in walking mostly on the plantar side, which contraction of the flexor brevis tries to forestall. The overexertion of this muscle leads to its permanent involuntary contracture. Thus hallux malleus develops which, however, may also occur without primary hallux rigidus by cramp of the flexor brevis hallucis. The malleus position is apt to cause the abductor hallucis to slide downward and thus to strip it of its abduction power. When the adductors prevail, hallux malleo-valgus very frequently evolves.

*A paper read at the meeting of the British Orthopaedic Association, June 4th, 1920.

Hallus valgus is in most cases the generally acknowledged effect of too narrow or too pointed shoes, especially when high heels are worn with them. Not everybody who wears such shoes gets hallux valgus. Luxation of the extensor proprius and flexor longus hallucis is needed. Thus relative hard pull on these muscles is required. This is in harmony with the fact that frequently hallux valgus is attended by hallux rigidus. The pull of these luxated muscles causes the widening of the region of the metatarsal heads, especially the enlarging distance between the 1st and 2nd.

The osteophyte and the bursa mucosa with the characteristic reddishness which develops, denote the progressive stage into which hallux valgus gets by the luxation of the above tendons. The abductor hallucis, when losing its abducting power by displacement towards the planta, thus introduces a second disturbance of muscle balance. The valgus condition is then combined with malleus, which is shown by the callosity on the plantar side of the inter-joint of the big toe. Hallux valgo-malleus has developed. In this condition the valgus element prevails, whilst in hallux malleo-valgus the malleus part forms the outstanding feature. Moreover in this condition the metatarsal heads are less wide apart.

From the above it follows that well fitting shoes and raising of the inner border may largely contribute toward preventing the development of these conditions.

Therapy should be directed both to muscle balance and joint wear. The transplantation of the abductor hallucis has proved useful to me. In not light cases it may be combined with shortening of the 1st metatarsal according to Ludloff's method or by the removal of part of the metatarsal neck. I should much like to hear the results of your vast experience on the removal of the metatarsal head.

### Discussion

Mr. Trethowan: The condition of hallux rigidus may, of course, be due to different causes; there is the one class that is due to accident; other cases are due to acute infection of the big toe joint; subacute rheumatism is very common, I have had a great many such cases, all young people. That is one form you must not touch. If it is a rheumatoid condition, you must not attempt to touch it.

The conservative operation would seem to be to take out a wedge behind the joint. Don't open the joint more than you can help. Take out just so

much wedge as will enable you to break the toe. That gives an immediate result lasting six or twelve months; ultimately they tend to go back.

MR. ELMSLIE: Every one of us operates on Hallux valgus and Hallux rigidus, and I would like to say I believe I have tried everything for these conditions, including removal of wedges, transferring of extensor pollicis, transferring of adductor pollicis, and complete excisions, and I have absolutely no hesitation in saying that there is only one successful operation for hallux valgus, and that is, complete removal of the head. It is a most satisfactory operation, if we do it in the right place and of course treat the patient afterwards properly. You have got to take every step afterwards to get the neck of the first metatarsal into the proper line. It is a most satisfactory operation. Of course we all have failures, but I must say I have not met many failures myself. I have had patients come back to me, and they are able to do practically everything that a normal person can do. I have no hesitation in saying that full excision of the head right down to the neck, is a very successful operation.

I have not often tried transplantation of the abductor pollicis, it seems such a rational thing to do, particularly in young people. I have done it, but I was disappointed with the ultimate result.

I have also tried wedges, but they have all relapsed, and I have now got to the stage that I won't do anything but a full excision, and personally, I am satisfied with the results.

MR. ALWYN SMITH: I think there is something in what Mr. Trethowan has said. I have tried everything—they do fairly well, but my bugbear is the hallux rigidus flexus, the man who cannot walk, in which case you have to take away the head of the bone.

We don't get the simple relapses now that we sometimes used to get. As long as they are walking on the level they do quite well, but I have one case of a man who comes complaining that, after fishing all day, he finds he cannot jazz all night. . . . As regards this operation I take the mid line between Mr. Elmslie's hyper-optimism and Mr. Trethowan's pessimism.

MR. AITKEN: I think I should like to agree with Professor Jansen as to the pathology of this condition. It seems to me that one has got to look at hallux rigidus flexus as a part of what is a "flat foot" deformity . . . . In the case of elderly people, who come with painful great toe joints, with a certain degree of hallux valgus, you generally find that the whole arch has fallen inwards. I take it this way. When you are getting extra strain on the foot, and the arch is tumbling over, the patient makes a great effort to keep that arch up, there is long continued overwork of the great toe, which leads in time to changes due to teno-synovitis. I think it is this constant balancing strain on the inner half of the foot that is in this case responsible for the painful great toe. Therefore, I will not undertake the treatment, operative or otherwise, of this case, unless the patient will consent to have the whole thing treated as one condition. The important point is to get the full breadth in the fore part of the boot, so that there is room for the patient to spread his toes. You must get the inner side of the arch well thrown up. Often the great toe has been overlapping the side of the sole of the boot; the middle of the arch is down, the great toe joint is swollen; and the sole is too narrow.

MR. DUNN: As regards these patients who come complaining of pain. This is not always associated with limitation of movement in the joint. Very often the cause of the pain is some exostosis on the metatarsal, and the pain is due to pressure between that and the boot, and all that is necessary in these cases is to trim the metatarsal ridge and remove all the prominent bone, so that the foot fits the boot. We very often came across these cases in the Army, as a result of wearing Army boots, and the only thing necessary was to remove the exostosis so that they could wear the Army boots.

As regards limitation of movement in hallux valgus, the pain in the joint is here also due to exostosis and pressure. Trim the metatarsal head, leaving the under surface for weight-bearing—remove a good half of the base of the proximal phalanx. Get rid of the exostosis and thus allow free movement, leaving a good weight bearing surface.

There is one other condition. If the condition is associated with fixation of the sesamoid bones to the metatarsal head, you are apt to get corns on the weight bearing portion. I think in this case the sesamoid bone should be removed and the undersurface of the metatarsal levelled.

MR. BENNET: I know of one Surgeon who trimmed the head of the metatarsal and so prevented any pressure, but he had so many recurrences that he adopted, at my suggestion, the other method of simple excision of the head of the bone. In my opinion, excision of the head of the metatarsal bone is most gratifying, and I know of no other operation for that condition which anything like touches it.

MR. LEAMING EVANS: In an advanced case of hallux rigidus I know of no better operation than an excision of the head. I did one some years ago on a postman, and I know this man has carried out his duties, walking his rounds of eighteen miles a day, with the excised head.

As regards the operation, I usually open the joint by a dorsal incision, expose the head, and look at the cartilage. If there is lateral exostosis and the rest of the head has got a good cartilaginous surface, I remove the exostosis: if the rest of the cartilage is diseased, I remove the head. I am an optimist on both of these operations. I have traced a good many of the cases, and the exostosis does not recur. As regards excision of the head, the thing that has frightened me is that "kicking up" of the toe after excision. . . . I would like just to mention I have only had one case of the removal of the base of the phalanx, and in that case I had to do an osteotomy afterwards. Personally, if I am going to remove the head, I remove the whole of it. The disadvantage of that is that the extensor tendon is apt to overcome the flexor, and, in order to obviate this, I free the under surface of the remaining part of the metatarsal, remove the head and neck fairly freely along the plantar surface, and allow the free surface of the bone to slide easily up and float on the sesamoids. I believe that obviates that "kicking up" which is such a disadvantage. As a confirmation of my statement that excision of the head gives a good result, I have a letter here from a patient in whose case I removed both heads. I may say that the patient was an Army Officer, and not at all a man who was easily satisfied, and he writes "I am exceedingly pleased with the result of the operation."

SIR ROBERT JONES: We have had a most interesting discussion. . . . I have had a series of cases in which I took out a wedge just behind the head of the bone, but the results were not always satisfactory, and, although one is always prepared to listen and to try, I have come back to the firm conviction that the most satisfactory operation is complete removal of the head. . . . It is important to recognise that this is only part of a general condition. The operation of removal of prominences one has done often, and the point of interest about that is that, after removing them, you have to remember you may find the trouble intensified later on.

# CONGENITAL TORTICOLLIS*

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Torticollis of congenital origin is a deformity rarely met with in the general practice of medicine and surgery. Only twenty-six of more than 212,000 patients examined in the Mayo Clinic from January, 1910 to October, 1919, had a diagnosis of congenital torticollis and operation. The average age of these patients was 17. Twenty-three of the twenty-six had had no previous treatment. The rarity, lack of, or inadequacy of the previous treatment, together with the advanced age and marked deformity appear to warrant an investigation and report of results. Torticollis of the spasmodic, rheumatic, and spinal caries types is not considered in this study.

The deformity presents a characteristic picture, varying somewhat with the age of the patient. The sternomastoid muscle may be enlarged soon after birth and the head drawn slightly toward the affected side. As the swelling subsides the muscle is contracted to a tense and hardened cord, the head is drawn further toward the shoulder and the chin in the opposite direction. The rotation and contraction soon produce a scoliosis of the cervical spine, the shoulder is narrowed and raised in an attempt to hold the head in a perpendicular line, and a compensatory scoliosis develops in the dorso-lumbar area. Distortion of the face results and the muscles, fasciae, and even vertebrae may become deformed if the condition is not relieved. Changes in the visual field, and thoracic, spinal, and pelvic deformity may occur (Fig. 1).

The etiologic factor appears to be trauma to the sternocleidomastoid muscle at or preceding birth, producing an ischemia with resulting chronic interstitial myositis. The ischemia may result from pressure upon the sternomastoid branch of the superior thyroid artery or from a hematoma into or around the sheath of the muscles affected. Heredity, infection, and syphilis do not seem to be factors. Impaired circulation has been ascribed as the cause of torticollis, but I believe that the lack of normal impacted stimuli

*Submitted to the American Orthopedic Association, June, 1920.

transmitted through the osseous system is an important contributing factor.

Eight of our patients had been traumatized at birth, five by the use of forceps or by unusually long and difficult labor, two in breach presentations, and one in transverse presentation. One ascribed the cause to injury soon after birth. Seventeen gave no

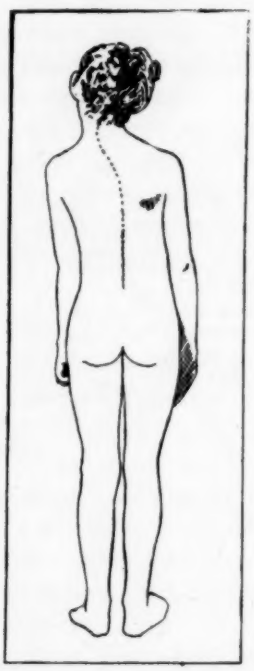

FIG. 1. Posterior view (tracing of photograph) of patient aged 12 with congenital right torticollis and scoliosis. This patient had marked facial distortion (Fig. 2). The right shoulder appears wider from the posterior aspect.

definite cause for the condition or history of trauma. Since the ages varied from four months to twenty-eight years details with regard to the injuries at birth were extremely difficult to obtain.

The diagnosis presents little difficulty. A painless contraction of the sternocleidomastoid muscle, easily palpated and not tender, produces the characteristic deformity, in which the mastoid is drawn toward the raised and narrowed shoulder on the side affected and the chin forced in the opposite direction. (Fig. 2).

In the differential diagnosis, Pott's disease, infection with myositis and perispondylitis, spasmodic torticollis, fracture of the spine, and syphilis are considered. *In tuberculous disease* of the cervical spine there is a general muscular rigidity with pain, especially on jolting, and as the disease progresses the patient supports his head on his hands. The symptoms are more severe and the temperature rises in the afternoon. In the late stages the destructive process may be demonstrated by the roentgenogram. The von Pirquet test may be of value, especially in children under 5. Infections giving rise to torticollis produce a more general muscle involvement with pain, tenderness, local edema, higher

FIG. 2. Tracing from photograph (Fig. 1) showing distortion of the face. The measurements show the right side to be three-fourths inch smaller than the left.

temperature, evidence of sepsis, and acute adenitis, and though the deformity may be fairly typical it rarely accurately represents the congenital type which is usually painless and without a rise in temperature. In the late stages with perispondylitis fixation of the cervical spine may take place without persistent pain and the deformity be quite typical, although palpation fails to demonstrate a spasm in the sternocleidomastoid and a fixed spine that can be demonstrated clinically and sometimes roentgenographically. *Spasmodic torticollis* occurs usually in middle life or later; it is functional and is found in neurotic, overwrought persons of impaired nerve power. The spasm is easily overcome temporarily but recurs as soon as the force is released; there is little or no pain be-

fore, during or after the manipulation, which is not true of the congenital type. In *fracture of the spine* pain in later life and the roentgenographic findings are characteristic and may be readily differentiated. *Syphilis* presents many varied manifestations of the deformity, although a careful history, a clinical examination, and serologic findings should reveal the true cause when this possible etiologic factor presents itself. *Congenital deformity of the vertebra* may be encountered, as was the case in one of the patients included in this series. The spine should be x-rayed in all cases in order that an accurate prognosis may be given.

The treatment of congenital torticollis is surgical. Although manipulation may be of some benefit, this prolonged and painful procedure has so little to recommend it that it has long been discarded. Surgery offers a rapid, safe, and certain method of relief, with a minimum of pain and discomfort. It is our practice to urge surgery as early as possible. We divide all contracted structures, over-correct the deformity and maintain the new position by means of plaster casts. Unless the patient is seen in the early stages subcutaneous tenotomy should be avoided, and even early it is attended by the danger of hemorrhage and incomplete operation. The sternoclavicular route is preferable to the mastoid, although the scar from the latter is less noticeable because of the covering of hair. The Mikulicz operation of removing the lower two-thirds of the sternocleidomastoid and the cervical fascia leads to the danger of damaging the spinal accessory nerve and vessels and has not been found necessary in any of our cases.

## Technic of Operation

An incision just above and parallel with the clavicle at the sternal end is made through the skin and platysma myoides muscle and superficial fascia. Blunt retractors expose the contracted and cordlike sternocleidomastoid muscle which is dissected free from surrounding structures by blunt dissecting scissors and divided, or a portion an inch in length is excised for pathologic examination. An assistant turns the chin toward the affected side and pulls the head in the opposite direction; if there are any contracted structures they are thus brought into prominence and then divided. Usually division of the superficial fascia, platysma, and portion of the deep fascia is sufficient, and with good exposure there is little

danger of injury to the jugular vein, pneumogastric nerve, and carotid artery. When all contracted structures are divided there is little or no resistance to overcorrection. The wound is carefully sponged and all bleeding points are ligated, leaving a dry wound. If possible a few sutures are placed so as to aid in the obliteration of dead space and the wound is closed with silk worm and a fine dermal suture; if the platysma is much contracted no attention is paid to its approximation. A pad of gauze and cotton is placed over the wound and held firmly in place so as to aid further in the obliteration of the cavity. A cast maintains the corrected position. If scoliosis has resulted from long standing postural deformity the patient is placed in extension the day before operation and a cast applied from the pelvis to the axilla. This allows greater ease in fixing the head and shoulders when the patient is under anesthesia and permits of the correction of the curvature in most instances. When the fixation is complete the shoulder on the affected side should be held down firmly with the chin pointing toward it and the head forced well over in the opposite direction. The patient readily becomes accustomed to the corrected position and is held practically free from pain in a retentive apparatus not easily moved. The length of time in the fixation cast varies with the degree of deformity, usually from one to three months, after which the scar has little tendency to reproduce the deformity by contracting. A window should be left over the trachea in all cases. Because the habit of holding the head in the torticollis position if not easily overcome the plaster fixation is very satisfactory, although all patients are instructed to exercise before a mirror after the cast is removed. At times a bag of shot carried in the hand of the affected side is of value in correction. In some of the less severe deformities stretching by extension and active motion following operation may be sufficient, but I believe that long standing deformities, such as are observed in this Clinic, require retentive dressings in overcorrections.

Eighteen of the twenty-six patients operated upon were heard from. Fourteen reported that they were cured and four much improved. The age of some of the patients and the lack of previous treatment were responsible for deformity which even the reposition of the head in normal balance and poise cannot overcome, especially if the patient's full growth has been attained. It is well to have the patient understand this, and that if he has any facial

deformity, it will be accentuated, at least for a time, and in adults will probably be permanent. In children with distortion excellent facial recoveries are obtained.

## SUMMARY

Congenital torticollis is a deformity not commonly met with in the general practice of medicine. The deformity is characterized by a practically painless, contracted cordlike sternocleidomastoid muscle, which pulls the head toward the side affected, narrows and draws the shoulder upward, forcing the chin in the opposite direction. The etiologic factor appears to be trauma at or preceding birth. Permanent deformity may be prevented by early treatment. The treatment is surgical and retentive apparatus is advisable (Fig. 3).

FIG. 3. a. Contracted prominent left sternocleidomastoid with raised shoulder drawn upward to the affected side of the head; the chin is turned in the opposite direction. The right eye is held higher than the left and the face is distorted. b. Posterior view of the shoulders and neck showing raised shoulder previous to operation. c and d. One year after operation, the head and shoulders were practically in normal position although the facial distortion is apparent. The right eye is noticeably higher than the left.

## Simple Congenital Torticollis

Case 89220. A boy, aged 12, came to the Clinic August, 1913, because of a wry-neck. He was a second child and had had an apparently normal birth. His head was drawn toward the right shoulder and the deformity seemed to get worse as he grew older.

At operation August, 1913, the contracted sternocleidomastoid was divided. Six and one-half years later the patient's condition was apparently normal.

## Complicated Congenital Torticollis

Case 199771. A young woman, aged 21, came to the Clinic July, 1917, because of deformity of head and neck. The examination revealed a tight cord like sternocleidomastoid, the head drawn down and the shoulder up, the chin being forced towards the opposite shoulder. There was marked distortion of the face, the left side was smaller, and the eye lower. Scoliosis was present.

A roentgenogram of the spine showed a congenital deformity of the fifth and sixth cervical, and second, third, and fourth lumbar vertebrae, and bilateral cervical ribs, the right being large. The prognosis was guarded because of the complication but operation was advised. The contracted sternocleidomastoid and fascia were divided and a plaster of Paris cast applied. The result of the operation was satisfactory, the patient reports herself cured.

# THE CURATIVE PLAY SYSTEM OF THE CHILDREN'S MERCY HOSPITAL OF KANSAS CITY, MISSOURI.

(A preliminary report.)

DR. R. McE. SCHAUFFLER, KANSAS CITY, MO.

Just acknowledgment has been made by the Scientific World of the valuable contributions of Orthopedic Surgery to the War Problems. The interest and enthusiasm of the laity has been aroused by Reconstruction Work. In the operating room, in the physiotherapy department, in the gymnasium and in the work shop, it has justified itself. Orthopedic surgeons have been prompt to call attention to the need of applying these reconstruction lessons to the problems of the crippled child, the physically deficient, and to those disabled in industry.

My purpose is to direct your attention to one largely undeveloped field in the program of reconstruction for children.

In the Spring of 1919, Dr. Katherine B. Richardson, of the Surgical Staff of the Children's Mercy Hospital, suggested to the writer that we should attempt to direct the play of the children in such a way as to help them overcome their physical disabilities. As an outgrowth of this suggestion, a plan has been worked out which we have christened, "The Mercy Hospital Curative Play System." The two words, "Curative Play" are each significant. It must have a direct therapeutic purpose. It must be made fun; must appeal to the child's love of play and to its desire to imitate others, and to compete with them.

In the literature of recent years the value of active exercise over passive has been frequently noted. Attention has also been directed to the fact that repeated earnest efforts of the will seem to have an effect in reviving nerve centers not quite completely destroyed, or reopening tracts not quite hopelessly blocked, when more casual efforts have failed. These facts have been borne in mind and this system invites active exercise under the stimulus of enthusiasm within limits set by a scientific observer.

Treatment is definitely prescribed by some member of the Surgical or Orthopedic Staff, for each individual child. An accurate, detailed diagnosis is put on the patient's card; the percentage of strength in partly paralyzed muscles, the range of motion in joints, and the degree of deformity, are recorded before the treatment is begun. It is necessary to specify what parts of the body may be used without protection, what need partial protection, and what parts must be completely protected.

With many children, in the first weeks of the treatment, the work must be individual. It may begin on a gymnasium mat in the corner of the ward. The teacher is down on the floor with the patient, and the procedure has some of the characteristics of a mild romp or a game, although it could not properly be called play at this time. The next stage may be individual work with the child in the gymnasium with the aid of some simple apparatus. Then two or three children are grouped together; the scene is shifted to the play room, or out-of-doors, and the same types of exercise are worked out in a game.

Massage and electricity, heat and light, and passive motion may, any or all of them, be indicated for the child at the same time, and contribute their part to improvement. We must not claim all the credit for curative play, but try to appraise its addition to the results in larger benefits. Those cases nearly at a standstill under the other methods, afford us the best opportunity to appreciate it's advantages. To pass to an individual illustration: Here is a small boy, bed or wheel-chair ridden for years, where initiative for locomotion is apparently gone. He is lonesome when the other boys go to the dining room for meals, while he has a tray in the ward. One day he climbs onto another chap's kiddie car and manages to pole himself along with one leg, to the dining room. The earnest desire to trail the bunch has been more effective than any exhortation of doctor or nurse. With the kiddie car comes the need of a scientific oversight. Does the boy, with adductors already overstretched, cross the foot over the car and ride with this limb in exaggerated abduction? It is good for him to ride, but he must be taught to sit and so propel himself as to gain the maximum benefit, and not make anything worse. It is a short step

to having a kiddie car race between two cripples. The next step is to have the boy propel himself and, in addition, push or kick a ball with one foot. It will depend on his lesions as to which foot he does most of the propelling with, and which foot is used to strike the ball. Two or more boys at a game of this sort, with some sort of objective or goal, and we have "kiddy car polo."

Let us take another illustration: Here is a boy with almost complete dangle legs and marked loss of power in the lower back and upper thigh muscles. As you know, there is almost always some latent power remaining in the upper part of the limb. The child cannot possibly walk with braces, for he has not enough power to advance the splinted limbs, or to prevent a backward flop of the buttocks. Our first efforts are directed toward developing these muscles, the patient lying on his back. Then the boy is encouraged to kneel on a padded table, with his arms through the swinging rings, and to try to walk on his knees. It is more fun if he is traveling between low parallel bars over a gymnasium mat and another boy is trying to do the same thing at the same time. Suppose next, the boys are in a sand bag trench and are expected to shoot with a toy gun. At first the boy must lean on the parapet. The day that he can kneel free and hit a mark with the gun he is strong enough to be able to begin to learn to walk with braces. Thus, we have the "Trench Game," or the "War Game."

We have at Mercy Hospital a teacher who has been trained in physio-therapy and has had the practical experience of a Reconstruction Aid. She devotes her entire time to Curative Play. The expenses are paid by the Children's Relief Association of Kansas City, and this summer a small group of volunteer workers will assist the Play Teacher.

Most of the work is done in the gymnasium, or in a specially equipped play room, or out-of-doors, where we have arranged some simple apparatus on the lawn. This spring and summer we are planning to build a large play ground just as definitely planned for Curative Play as a country club is laid out for tennis, polo and golf.

The equipment, in addition to a well furnished gymnasium, includes:

Kiddie cars,
Rubber and wooden balls of various sizes,
Jacks and marbles,
Bean bags and target pockets,
A ping-pong outfit,
Building blocks,
Large sand bags for parapets,
Toy guns,
A captive tennis ball and raquets,
Wig-wag flags;

These require no comment; their uses will naturally suggest themselves.

In addition I want to call attention to some more special features:

(1) A platform for signalling, with three pairs of stairs leading to it; (a) with average steps for children, (b) with high steps to force stiff hips and knees, (c) with very shallow steps for paralyzed cases.

(2) Two sets of fixed parallel bars, long and rather low, for walking. These have proved very useful as, even if the hands are not used, the side bars give the feeble walker confidence. Two sets provide opportunity for competition. Low movable, parallel bars for support in walking on knees.

(3) Punching bags, so hung as (a) to be struck by the fists, (b) to be kicked, (c) to be kicked upward with patient lying on back on a mat.

(4) Velocipedes, with slipper pedals.

(5) Mechanical toys, with key wind, some forward, some backward; others with a windlass wind.

(6) Balloon bags for inflation.

(7) Vaulting horses, or a sort of gymnasium hobby horses, with varying size barrels and stirrups, adjustable and removable. These are valuable for two opposite types: To stretch scissor legs, and to strengthen a weak grip of the knees.

Some plays require no apparatus. After a certain stage of quiescence is reached, children with Pott's disease seem to be benefitted by quadruped games. As long as they do not sit or stand, but run about on all fours in some animal game, there is no tendency to increase deformity and they improve more rapidly for the exercise.

This work was begun under unfavorable circumstances because it was largely confined to In-Patients in the Orthopedic Division. Many of these were badly diseased or desperately paralyzed and required many weeks, or months, of patient preliminary treatment by the teacher before they were ready for anything like a real game.

With the advent of warm weather we will have many out-patients, who will furnish more favorable material. It is proposed, later, to allow crippled children to come, just for play, provided they pass through the Dispensary, and, after complete examination, the types of play are prescribed by the Orthopedic Surgeon.

Forty-one cases were referred to the Play Teacher, between Nov. 15th and April 1st. These included fourteen old Infantile Paralysis cases, mostly dangle legs; six cases of Spastic paralysis, with rather severe limb disability, but of fair mentality; nine Spinal cases; seven cases of impairment of one or more extremities, due to inflammation; and five foot deformities.

Of these forty-one cases, eleven have been under treatment too short a time, or have been to irregular in attendance to be considered in this report. Of the thirty remaining cases, five were not improved; eighteen were moderately improved; and seven were greatly improved.

It is obvious that it has been a great advantage to have a trained person whose whole time was available for work for the improvement of function in the various types of deformity or disability. The improvement of some cases, such as one bad lateral curvature, could have been equally well attained by corrective gymnastics, without any camouflage of play. Upon analyzing the cases to see in what proportion the play element seemed a vital factor, we find it seems to have had a specific value in nine of the eighteen cases moderately

improved, and in three of the seven cases greatly improved. The others are a credit to the teacher, but no proper argument for curative play per se.

The writer of this paper has not forgotten the criticisms made at the last session of this Society on the reports of Curative Workshops, namely: That much was said of the organization, equipment and methods, but in most cases it was not proven that the work cured, or was the main cause of improvement. To support my contention, I must show that curative exercises, prescribed by the orthopedic surgeon, and supervised by a special teacher, by being made attractive by the choice of apparatus, by the introduction of competition and by the final submerging of the exercise in real play, have a therapeutic value not otherwise obtainable. I propose to report cases and results in detail after the method has been a complete try-out, and let it stand on its merits.

It has always been a cardinal principle in Mercy Hospital not to repress the spirit of childhood. There is plenty of room. The very sick children and those who need quiet are by themselves. We give the children a great deal of liberty. There has always been a school room and a play room, and toys and little entertainments. But with the advent of the Play Teacher I note a new interest in the lives of the children. Lethargic cases are waked up, and discouraged ones are heartened. The normal activities of the more vigorous are directed with a therapeutic purpose. A number of children show an improvement which we have not attained by other methods.

Because of these encouraging features, I have ventured to intrude on your attention with this preliminary report of Curative Play.

# REPORT OF A CASE OF LOOSE OSTEOCARTILAGINOUS BODIES IN THE KNEE JOINT

BY PIO BLANCO, M. D., FELLOW IN ORTHOPEDIC SURGERY, THE MAYO FOUNDATION, ROCHESTER, MINN.

Osteocartilaginous bodies in the joints is not a rare condition, but the case under discussion is a rare type. It is reported because of this rarity and because of its association with a mild hypothyroidism.

Case 26042. Miss W. F. C., aged 35, came to the Clinic July 10, 1909, with symptoms of exophthalmic goiter. The superior thyroid vessels were ligated. Following this operation her general condition improved greatly. September 28, 1920 she again came to the Clinic complaining of trouble in both knees. Eleven years before she had sustained an injury to the right knee following a fall from a chair. The knee became swollen and painful and completely incapacitated the patient for two weeks. She had difficulty in fully extending the knee after being seated for some time. Walking upstairs caused a catch in the knee which disappeared by gentle manipulation. During 1916 about once a month if the knee was kept flexed for a long time it locked, producing pain, swelling, and loss of function for two weeks. By rest in bed the patient was able to straighten the leg completely. In September, 1920, she had a sudden onset of pain and locking and swelling of the other knee without any apparent cause. She had had acute tonsilitis and influenza on several occasions and when a child she had had scarlet fever complicated with general arthritis, especially in the knees and feet.

At the time of examination the patient weighed 140 pounds and was 5 feet 3 inches tall. A distinct hypofunction of the thyroid gland was manifested by a slight puffiness of the face, dry skin, and dry brittle hair, and a basal metabolism of -10 per cent. The pulse, blood pressure, and temperature were within normal limits. There was a slight secondary anemia; the leukocyte count was normal and the Wasserman test negative. The tonsils were graded 2 on a scale of 1, 2, 3, and 4. Pus and a periapical infection were observed around one tooth in the roentgenogram. The

kidneys were normal. The knees were normal in appearance, but leathery crepitus could be elicited on motion in both knees. Extension was complete, but flexion was possible to a little less than a right angle. Roentgenograms of both knees showed marked destructive processes in the condyles of the femurs and to a less extent in the articulating surfaces of the tibias. The condyles of the femurs were flattened out. Because of the clinical history and the roentgen-ray findings the diagnosis of loose osteocartilaginous

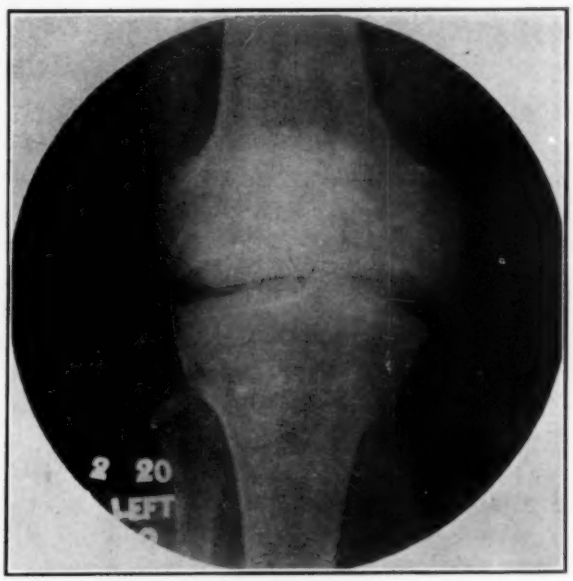


FIG. 1. Case 26042. Front view of the left knee before operation.

bodies of both knees, probably due to osteochondritis dissecans, was made. (Fig. 1).

Operation for the removal of the bodies was performed October 13, 1920, by Dr. M. S. Henderson who noted the following: "The condition in both knees is very unusual. The normal convex surfaces of the condyles of the femur have been changed to concavities, and fringes of synovial menbrane with cartilage hang from both internal condyles. On pressure over these areas loose bodies can be felt. One piece of condyle about 3 cm. in diameter was removed on cutting through the cartilage in the right knee,

and two pieces each about 1 cm. in diameter were removed from the internal condyle of the left femur. The condition is probably a type of osteochondritis dissecans."

The patient's convalescence was uneventful and she was able to walk after two weeks. On the day of dismissal from the Clinic, thirty-two days after the operation, the motion at the knees was the same as on the day of admission, but no feeling of locking was experienced. (Fig. 2).

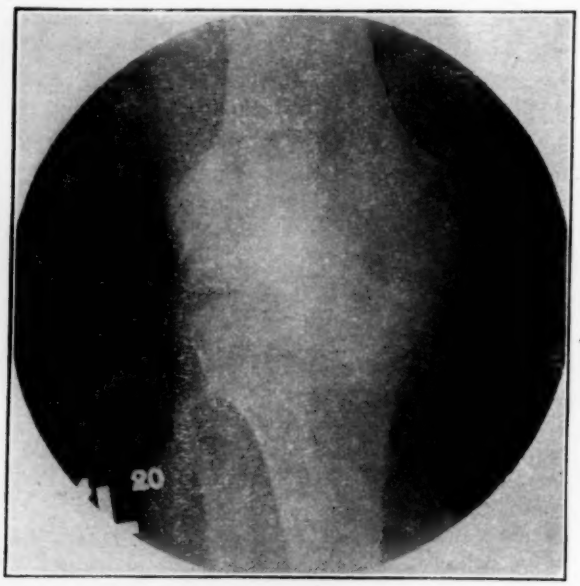

FIG. 2. Case 26042. Front view of the left knee after operation.

November 6, 1920, the tonsils were removed. The left tonsil contained fluid pus. Following tonsillectomy there was severe local and general reaction in the form of fever and chills and slight joint manifestation. The submaxillary glands were much inflamed. The knees were not involved in the reaction.

## ETIOLOGY OF LOOSE BODIES IN THE KNEE JOINT

Comparatively little has been written with regard to loose bodies in the joints. The underlying pathology is far from being recognized and the hypotheses advanced are only speculative. The

condition has not been produced experimentally in animals. No bacteriologic or serologic examinations are reported to prove or disprove its infectious origin. Judging from the changes observed in roentgenograms and at operation the production of loose bodies in joints seems to be gradual.

John Hunter explained the presence of loose bodies in the joints by the transformation of a blood clot in the joint into cartilage. He thought that effused blood, "from a species of sympathy," would be transformed into a tissue similar to that in which the blood was effused; it would assume the character of bone if effused between the ends of bone. This theory is interesting but not convincing. Kopp, and Henderson[2] have suggested the name "osteochondromatosis" for a condition of the synovia of the capsule characterized by thickening with formation of fringes which develop into loose bodies. These changes have been explained by others on the basis of inflammation, but Henderson believes that they are a form of benign new growth of the synovia. Not infrequently loose bodies are found in hypertrophic arthritis as a result of separation of the osteophytes following trauma to the joint. In many cases of neuropathic joints (Charcot joints) loose bodies may be produced but they never cause mechanical derangement. König, in 1887, described a rare condition known as osteochondritis dissecans in which the ends of bones become brittle and give rise to loose bodies. His hypothesis is that occlusion of one of the small end arteries supplying an area on the mesial surface of the internal condyle of the femur resulted in a separation of a small portion of the condyle. Henderson has observed that most of these changes take place at the insertion of the posterior crucial ligament on the external ridge of the internal condyle of the femur. He believes that the constant strain imposed on this ligament by the physiologic action of the knees produces changes in the tissues at its insertion which may have something to do with the formation of loose bodies.

## Discussion of Case

Several points of interest are brought out in the study of this case. Focal infection must be considered in any arthritic condition. In this case there was definite infection in the tonsils. Although their removal was followed by a septic reaction, the knees

were not involved, suggesting that infection was not an etiologic factor. There were destructive changes in the articulating surfaces of the femurs and tibias which were disproportionate to the amount of disability. These extensive pathologic changes may be regarded as a result of the abnormal brittleness of bone due to some metabolic disturbance. In this case there was definite evidence of hypothyroidism. In a group of individuals who have a low metabolic rate there are joint symptoms such as pain and crepitus. If the disturbance in metabolism is due to a hypofunction of the thyroid patients may be relieved of their arthritic pains by the ingestion of thyroid extract. It seems that certain changes must take place in joints when the metabolic rate is low. These changes have not been investigated but there is enough clinical evidence to suggest their relation to a hypofunction of the thyroid gland.

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# Editorial

## REPORTING RESULTS IN FRACTURES.

There are likely to be fallacies in a statistical report of any kind. It is notorious that surgeons as well as financiers may, and sometimes do, employ figures to support conclusions, which might in the hands of another enable one to arrive at very different opinions.

The editor has observed this tendency quite largely in the reports of surgeons on the results of the treatment of fractures. This is true especially in reporting upon results in the open treatment of fractures. It is not sufficient to arrive at conclusions regarding the open treatment of fractures simply to say that patients recovered, had infection, failure of union, delayed union or refracture, in certain percentage of cases. What one really wants to know is the length of disability and the ultimate effect upon the patient. One must know his exact condition after operation as compared with his condition before.

In the treatment of fracture of the femur for example, simple or compound, ones impression is that open treatment, especially if followed by complications of any kind, very greatly prolongs the period of disability and very greatly endangers the patient's ultimate functional restoration.

If Lane plates are used, final functional recovery is often postponed for months while the question of retention of the plate or removal is under consideration. If infection occurs either at the primary or the secondary operation the return of the patient to duty may be postponed for a considerable length of time. If osteomyelitis develops upon either occasion, and especially if the plating has been done for a simple fracture, the patient is seriously damaged and the surgeon has a heavy responsibility to carry.

If we are to arrive at satisfactory conclusions as to the relative value of methods in the treatment of fractures, it seems to the Editor necessary that the following or similar questions must be answered with regard to every case:

First: Date of fracture.

Second: Character of treatment during the first ten days.

Third: Description of operation, if any.

Fourth: Temperature course before and after operation.

Fifth: Exact kind, and method of application, of splint.

Sixth: Length of time in bed.

Seventh: Length of time in hospital.

Eighth: Exact condition upon being discharged from hospital. (Position of fragments, length of limb range of motion in adjacent joints, etc.)

Ninth: Kind of treatment after being discharged from hospital.

Tenth: Date of discharge from all treatment. (Also same information as under eight.)

Eleventh: Occupation and duty before injury.

Twelfth: Date of return to same duty.

Thirteenth: If not able to return to original occupation, kind of employment after discharge.

Fourteenth: Vocational re-training methods employed, if any. (One might almost add also exact earning capacity before and after injury and treatment.)

If the above questions are fairly answered for each patient in all fracture reports, we shall be able to decide whether or not the surgeon is returning his patients promptly to duty. We shall also be able in time to conclude, as to the profession at large, which methods are securing functional results in the shortest time. There are very few fracture reports being made to the medical journals that give us reliable information on most of the above points. Conversely the fracture reports that we are having in the journals are such as either actually to mislead us or that give us information of little value in concluding which methods are most useful. In fact most of the reports simply tell us whether or not the patients survive to be discharged from the hospital and from professional care.

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## EDITORIAL NOTE

In a discussion of fractures in the November issue reference was made to an article by Dr. Ethan H. Smith in the New York Medical Journal for the preceding month. By error this article was credited to the Medical Record.

# Book Review

A Consulting Surgeon in the Near East. By A. H. Tubby, C. B., C. M. G., M. S., Consulting Surgeon to the Westminster Hospital. Cloth. Price, 15 shillings net. Pp. 279 with illustrations. London: Christophers, 1920.

Mr. Tubby has written previously an excellent two volume text book on Orthopaedic Surgery. This book is quite different. It is a rather personal narrative of the authors experiences on duty as a consulting officer at Gallipoli, in Egypt and in Palestine. Mr. Tubby tells us that he had the good fortune to have his family and a home in Cairo and in Alexandria for some time during the war. However, the author performed front line duty and duty as a Sanitary officer as well as exercising fully his functions as a consulting surgeon and as the organizer of an extensive surgical service. The book is sure to stand as one of the many that must be written before half will be told of the contributions of medicine and surgery to the war.

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The sixth edition of Dr. Whitman's excellent "Treatise on Orthopaedic Surgery is reviewed by Dr. Robert B. Osgood in the January "Annals of Surgery." It is stated that Dr. Whitman's book is "perhaps the best American text book on the subject" and practitioners of Orthopaedic Surgery as well as students are urged to read it "carefully and often."

# News Notes

## TREND OF WORKMEN'S COMPENSATION

An article contributed by Will J. French, in the November issue of the Monthly Labor Review, summarizes compensation history, past and present. The most important recent legislative development of workmen's compensation legislation is in extending the benefits of compensation acts to include vocational re-education and rehabilitation of men disabled in industry. Without waiting for the Federal Industrial Rehabilitation Act, a number of states have proceeded independently to provide re-education for injured workers.—*Modern Medicine.*

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A reconstruction hospital has been organized for New York City at 5 Livingston Place. Dr. Joseph A. Blake is Chief of Staff. The object of the hospital will be to apply war lessons in surgery to the relief of civilian injured and crippled. There will be departments of vocational training and guidance as well as the usual hospital departments.

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The following letter from Dr. Ridlon to the Journal is of interest to all our readers:—The Liverpool Courier of February 1, 1921 gives an account of the dinner "last evening" at the Adelphi Hotel in honor of Major General Sir Robert Jones, K. B. E., C. B., at which the Earl of Derby presided. The occasion was the retirement of Sir Robert from the Royal Southern Hospital, on the staff of which he has served for thirty years.

A "glowing eulogy" was spoken by Lord Derby, head of the War office. A portrait of Sir Robert by Mr. Morrison was presented to him by "the committee, surgeons, physicians ,and doctors of the hospital, together with the Bishop of Liverpool."

At about the third toast some one was heard to say: "Sir Robert be blowed! Bob Jones, here's your health."

Sir Robert Jones was the guest of honor at the annual dinner of the Medical School of the University of Bristol, and delivered the principal address. Sir Robert also gave the Cameron lecture at the University of Edinburgh on January 14th. The Cameron prize —awarded to him on this occasion because he had, "in the course of five years immediately preceding, made a highly important and valuable addition to practical therapeutics" was returned to be used as a prize for Orthopaedics in the University of Edinburgh.

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The New York Post-Graduate Medical School and Hospital announces that there will be available this year six scholarships under the terms of the Oliver-Rea Endowment.

The purpose of the Endowment is to award scholarships to practicing physicians of the United States to defray in full the expenses of tuition at the New York Post-Graduate Medical School.

According to the wishes of the donor, physicians in the State of Pennsylvania will receive preference in the award of these scholarships.

Applications may be sent to the President of the New York Post-Graduate Medical School and Hospital, 20th Street and Second Avenue, New York City.

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Dr. J. D. Griffith of Kansas City has recently completed the organization of a Clinic or Group of forty-two physicians. The Clinic will have its headquarters at St. Joseph's Hospital.

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Prepared by Dr. J. E. M. Thomson, Lincoln, Nebraska.

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# Current Orthopaedic Literature

SWYNGHDAUW—CASE OF SCOLIOSIS, TREATED BY EXTENSIVE RESECTION OF THE RIBS. *Societe de Medecine du Nord*, July 9, 1920, in *Echo Medical du Nord*, October 9, 1920.

The author presents in the name of Professor Gaudier and his own a girl with scoliosis of the second degree with very marked costal deformity, treated by extensive resection of the ribs. This method is the first attempt of the surgical treatment of scoliosis and seems destined to give very interesting results, all though it is not directed against the deviation of the spine itself, it remedies the thoracic deformity which is much more apparent and more disfiguring.

This is the second attempt made by Professor Gaudier: the first case was operated before the war in which immediate results were very good were lost sight of. This is only the beginning of the treatment. It is also necessary subsequently to model the thorax by the aid of plaster of Paris cast. Dr. Gaudier adds to this communication that the surgical treatment of scoliosis is a very delicate question. At the last congress this method has met with violent protexts on the part of Orthopedists. These cases prove, that you can obtain a mobilization of the thorax with the aid of the rib resection. Gaudier is convinced that within six months he is able to obtain an exceedingly good result. This procedure is applicable even in advanced cases of scoliosis. (This report entirely ignores the work done by Michael Hoke of Atlanta, Ga., along the same line and with the same method, about ten years ago.)—*A. Steindler, Iowa City, Ia.*

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ANASTOMOSES TENDINEUSES POUR LESIONS TRAUMATIQUES DES NERFS. Mauclaire. IIe Congres de la Societe Francaise d'Orthopedic, 8 octobre 1920. *In Presse Medicale.* no 77, 23 octobre 1920.

*Indications generales.*—L'operation sera primitive si la lesion des nerfs est jugee d'emblee tres etendue, incurable.

Elles sera secondaire quand, au bout d'un temps assez long, un an en moyenne pour le nerf radial, deux ans pour le nerf sciatique, il n'y a aucun signe de regeneration. Vouloir attendre plus longtemps, c'est attendre un allongement tres marque des tendons qui perdent leur elasticite, sans compter la gravite des lesions osteo-articulaires concomitantes.

L'operation est indiquee non seulement pour les pertes de substances des troncs nerveux, mais aussi pour les paralysies partielles des nerfs resultants d'une section totale d'une ou plusieurs branches; de meme pour les sections partielles du tronc nerveux et pour les compressions partielles par du tissu sclereux, provoquant les paralysies curieuses, dites dissociees, expliquees par la topographie fasciculaire dans le tronc du nerf.

*Technique.—Le nerf radial est* celui qui a le plus exerce le sagacite des chirurgiens pour les anastomoses tendineuses; Mauclaire, avec son eleve Massart,s'est arrete a la technique suivante: detachment le plus bas possible des muscles cubital anterieur, grand et petit palmaire, en empietant sur l'aponevrose palmaire pour gagner de la longueur; plissement des tendons extenseurs sur 1 cm. 1/2; passage sous-cutane des tendons anterieurs et suture du tendon du cubital anterieur aux deux tendons internes des tendons extenseurs; suture des grand et petit palmaires aux tendons externes des extenseurs. Enfin suture des deux paquets tendineux externe et interne ainsi formes.

Si les tendons anterieurs sont tres raccourcis, on les fait passer par l'espace interosseux.

Les *resultats s*ont bons, a condition que l'operation ne soit pas trop tardive.

Des anastomoses tendineuses ont encore ete faites pour des paralysies du median, du cubital et du musculo-cutane.

Au *membre inferieur*, c'est la solidite qu'il faut rechercher; les anastomoses tendineuses ont peu d'indications.

Dans la paralysie traumatique du nerf crural, l' arthrodese du genou est preferable; dans celle du tronc du sciatique, l'arthrodese tibio-tarsienne.

"Les anastomoses tendineuses sont a conseiller surtout pour les lesions definitives des nerfs du membre superieur et principalement du radial; elles ont donne des resultats tres encourageants. A notre avis, dans la derniere guerre, elles n'ont pas ete assez souvent pratiquees chez les blesses atteints de lesions nerveuses definitives: il est vrai que beaucoup ne s'y pretaient pas volontiers."—*Archives Medicales Belges.*

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## CERVICAL DEFECTS

A recent number of the Italian journal which is devoted to the surgery of the locomotive organs was entirely given up to an article of 104 pages on congenital anomalies of the cervical vertebrae by Dr. Mario Bertolotti, who is in charge of the radiological departments of the University of Turin and of the Ospedale. Maggiore. This monograph is based upon 18 cases, of all but one of which radiographs are included. Most of the patients were brachicephalic, and in a number torticollis was present. One of them presented the usual features of a congenital muscular torticollis, such as shortening and sclerosis of the sterno-cleido-mastoid muscle and facial asymmetry, but a radiograph revealed the interesting fact that there was ossification of some of the deep muscles of the neck on the same side as the contracture. One case of cervical defect had also a typical spina bifida occulta in the loin. Several cases are described as "pseudo-Potts," the diagnosis of which might have been difficult but for the X-Rays, especially when scoliosis also was observed. The radiographs are very good and clear. The author has found that the best radiographic results are got by placing the patient prone, with the head in forced rotation to one side, and the source of the rays in a position corresponding to the tip of the fifth cervical vertebra. Two views are taken, one in a right anterior oblique, and the other in a left anterior oblique plane. The bibliographical supplement to this periodical is a useful publication.—*British Medical Journal.*